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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

31

Office Action Summary	Application No. 10/553,983	Applicant(s) SAWAI ET AL	
	Examiner Edward R. Cosimano	Art Unit 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-15 and 17-22 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-15 and 17-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The Oath/Declaration filed on 20 October 2005 and the Abstract filed on 20 October 2005 are acceptable to the examiner.
2. Applicant's claim for the benefit of an earlier filing date pursuant to 35 U.S.C. 120 is acknowledged.
3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
4. The examiner has considered the prior art cited in the base applications.
5. In view of the indication of allowable subject matter over the prior art of record, note below, the restriction requirement mailed 06 April 2007 and applicant's subsequent election of species 1, that is claims 1-17 and the withdraw of species 2 that is claims 18-22 is withdrawn and claims 18-22 are rejoined.
 - 5.1 In view of this an action on the merits of pending claims 1-11, 13-15 & 17- 22 follows.
6. Figures 1(A), 1(B), 2(A), 2(B), 3, 4(A), 4(B), 4(C), 5, 6(A), 6(B), 7(A), 7(B), 8(A), 8(B), 9, 10, 11(A), 11(C), 12(A), 12(B), 12(C), 12(D), 12(E), 13, 14, 15(B), 15(C), 15(D), 16, 17, 18, 19, 20, 21, 22(A), 22(B), 22(C) of the set of drawings containing 26 sheets of 40 figures are acceptable to the examiner where the set of drawings consists of figures {fill in} as presented in the set of drawings filed on 06 September 2006.
 - 6.1 The examiner has approved the proposed changes to figures 1(A), 1(B), 2(A), 2(B), 4(A), 4(B), 4(C), 6(A), 6(B), 7(A), 7(B), 8(A), 8(B), 11(A), 11(C), 12(A), 12(B), 12(C), 12(D), 12(E), 15(B), 15(C), 15(D), 22(A), 22(B) & 22(C) of the drawings as filed on 06 September 2006.
7. The drawings as filed on 06 September 2006 are objected to because:
 - A) while the drawing include figures 1(A), 1(B), 2(A), 2(B), 4(A), 4(B), 4(C), 6(A), 6(B), 7(A), 7(B), 11(A), 11(B), 11(C), 12(A), 12(B), 12(C), 12(D), 12(E), 15(A), 15(B), 15(C), 15(D), 22(A), 22(B) & 22(C) the drawings lack figures 1, 2, 4, 6, 7, 11, 12, 15 & 22 as have been either explicitly referenced or implied by the references to groupings of figures in the written description located on pages 40, 41, 43, 52, 60, 61, 62 & 70.
 - B) the drawings fail to comply with 37 CFR 1.84(p)(5) because they include the following reference legend not mentioned in the description, note reference legend S43 of

figure 11(B) which has not been mentioned in the written description of figure 11(B) located on page 64 of the written description, and note also the corresponding objection to the disclosure.

C) the drawings fail to comply with 37 CFR 1.84(p)(5) because they include the following reference legends not mentioned in the description, note reference legends 31a, 31b, 31c, 31d & 31e of figure 15(A) which have not been mentioned in the written description of figure 15(A) located on page 67 of the written description, and note also the corresponding objection to the disclosure.

7.1 Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

8. The substitute disclosure as filed 20 October 2005 is objected to because of the following informalities:

A) applicant's references to particular claims with in the text of the written description that appears on pages 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 17, 18, 19, 20 21, 22, 23, 24, 26, 27, 29, 30, 31, 32, 34, 35, 36, 60, 70 & 76 is confusing because the referenced claim may be cancelled or renumber at the time of allowance and hence these references will not correspond to the correct claim.

B) the written description lacks:

- (1) "Expression (3)" as described on page 50;
- (2) "Expression (4)" as described on pages 51, 52 & 57;
- (3) "Expression (5)" as described on page 53; and
- (4) "Expression (6)" as described on pages 55, 56, 62, 63, 68 & 72.

C) the following errors and/or inconsistencies between the drawings as filed on 06 September 2006 and the written description have been noted:

(1) if applicant chooses not to delete reference legend S43 from figure 11(B), note above, then the written description fails to comply with 37 CFR 1.84(p)(5) because the written description does not include an explicit reference to this reference legend in the description of figure 11(B) on page 64.

(2) if applicant chooses not to delete reference legends 31a, 31b, 31c, 31d & 31e from figure 15(A), note above, then the written description fails to comply with 37 CFR 1.84(p)(5) because the written description does not include an explicit reference to these reference legends in the description of figure 15(A) on page 67.

D) the disclosure lacks a statement of --We claim:--, as required by Office policy as set forth in MPEP 608.01(m).

8.1 Appropriate correction is required.

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9.1 Claims 1-11, 13-15 & 17-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

9.1.1 It is noted that the disclosure presents a disclosed substantial and credible utility for the invention of:

A) process/method claims 1-11, 14, 15 & 18-20 as a process/method comprising a sequence of steps/actions that when taken as a whole provide the useful and beneficial function of determining the "twist angel" of a wire-like structure/bundle;

B) machine/system/apparatus claim 21 as a machine comprising one or more structures that when taken as a whole achieve the useful and beneficial function of determining the "twist angel" of a wire-like structure/bundle; and

C) manufacture/article/item claims 13, 17 & 22 as a manufacture defined by the characteristics/features/components of the manufacture/article that when taken as a whole define the manufacture to provide the useful and beneficial function of determining the "twist angel" of a wire-like structure/bundle.

9.1.2 It is further noted that as recited/implied by the claims, the invention of:

A) claims 1-11, 14, 15 & 18-20 when taken as a whole are directed to a process/method that is intended to achieve the claimed utility of determining the "twist angel" of a wire-like structure/bundle;

B) claim 21 when taken as a whole is directed to a machine that is intended to achieve the claimed utility of determining the "twist angel" of a wire-like structure/bundle; and

C) claims 13, 17 & 22 when taken as a whole is directed to a manufacture/article/item that is intended to achieve the claimed utility of determining the "twist angel" of a wire-like structure/bundle.

9.1.3 In regard to each of the pending claims while taking each claim as a whole and interpreting the claims as the claims could reasonably be interpreted by one of ordinary skill at the time the invention was made as guided by the written description, it is noted that one of ordinary skill at the time of the invention could reasonably make the following observations in regard to the interpretation of each of the pending claims.

9.1.3.1 In regard to the recited utility of independent/base claims 1, 5, 13, 14, 15, 17, 18, 20, 21 & 22 it is noted that these claims recite an intended field of utility for the invention recited as a method in claims 1, 5, 14, 15, 18 & 20, a article/machine in claims 13, 17 & 22 and as a machine in claim 21 that provides the functions of determining the "twist angel" of a wire-like structure/bundle.

9.1.3.2 In regard to the limitations of independent/base claim 1, it is noted that:

A) the first action performed as recited in process claim 1 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate first data/information representing a “deformed shape model”, where the deformed shape model describes a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures where the wire bundle structures are clamped with clamp structures at predetermined locations as a series of one or more elements/sections and considers both the clamp axis and the branching axis”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

B) the second action performed as recited in process claim 1 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate second data/information representing a “reference shape model”, where the reference shape model describes the wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures where the wire bundle structures are clamped with clamp structures at predetermined locations as a series of one or more reference elements/sections and considers both the clamp reference axis at each predetermined location of a clamp”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as

positively performing any other function beyond the function recited as data/information gathering/processing.

C) the third action performed as recited in process claim 1 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate third data/information representing a final shape of the wire like structure by using a finite element analysis in order to superimpose the first data/information on the second data/information while considering the shape and material properties of the wire like structure”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

D) the fourth action performed as recited in process claim 1 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate fourth data/information representing a “twist angle” by evaluating the third data/information in order to determine the difference between the resulting reference angle and the resulting clamp axis”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is not positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

Hence, one of ordinary skill at the time the invention was made could interpret claim 1 when taken as a whole as being directed to nothing more than a process for the abstract manipulation of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.3 In regard to the limitations of independent/base claim 5, it is noted that:

A) the first action performed as recited in process claim 5 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate first data/information representing a “finite element model” of a wire like structure that describes a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures at predetermined locations as a series of one or more elastic elements/sections”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

B) the second action performed as recited in process claim 5 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate second data/information representing a “deformed shape” of the wire like structure by processing the first data/information and applying shape and material properties of the wire like structure and constraints tot eh first data/information”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of

the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

C) the third action performed as recited in process claim 1 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of "using an unspecified machine/process to generate third data/information representing a "twist angle" by evaluating the angle formed between a plane and the sub wire bundle structures", since as recited the data/information that is gathered/produced by the performing the recited function (1) is not positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

Hence, one of ordinary skill at the time the invention was made could interpreted claim 5 when taken as a whole as being directed to nothing more than a process for the abstract manipulation of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.4 The additional subject matter recited as dependent claims 2, 4, 10 & 11 is deemed to be directed to both (A) nonfunctional descriptive material that does not go beyond merely defining the nature/source of the recited data/information that is to be used when performing the recited processing; and (B) functional descriptive material that does not go beyond defining the nature of the steps/actions that are used when performing the recited functions of processing or gathering of data/information and hence does not alter the statutory nature of the invention recited as the invention in the base claims.

9.1.3.5 The additional subject matter recited as dependent claim 3 is deemed to be directed to nonfunctional descriptive material that does not go beyond merely defining the steps/actions that are used when performing the recited functions of processing or gathering of data/information and hence does not alter the statutory nature of the invention recited as the invention in the base claims.

9.1.3.6 The additional subject matter recited as dependent claim 6 is deemed to be directed to nonfunctional descriptive material that does not go beyond merely defining the nature/source of the recited data/information that is to be used when performing the recited processing and hence does not alter the statutory nature of the invention recited as the invention in the base claims.

9.1.3.7 The additional subject matter recited as dependent claim 7, 8 & 9 is deemed to be directed to nonfunctional descriptive material that does not go beyond merely defining the nature/source of a recited structure and it's corresponding data/information that is to be used when performing the recited processing and hence does not alter the statutory nature of the invention recited as the invention in the base claims.

9.1.3.8 In regard to the limitations of independent/base claim 13, it is noted that:

A) the structure recited in manufacture/article claim 13 is deemed to be directed to nothing more than a structure of a memory that has the characteristic feature of containing a program or code or instructions as "non-functional descriptive material" that is intended to perform a data/information gathering/processing functions of claim 1, see the discussion of claim 1 above, since as one of ordinary skill at the time the invention was made would recognize the recited invention lacks a positive recitation of any structure that could implement the functions of the recited program or code or instructions stored on the media so as to provide a concrete and tangible practical and substantial credible utility because the recited "computer readable media" can not by itself realize the function of the recited program.

Hence, one of ordinary skill at the time the invention was made could interpreted claim 13 when taken as a whole as being directed to nothing more than a manufacture/article that is intended to be a machine/process for the abstract manipulation of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited

structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.9 In regard to the limitations of independent/base claim 14, it is noted that:

A) the first action performed as recited in process claim 14 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate first data/information representing a “deformed shape model”, where the deformed shape model describes the main wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more elements/sections and the branching axis of a sub wire bundle at the location of a branch”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

B) the second action performed as recited in process claim 14 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate second data/information representing a “reference shape model”, where the reference shape model describes the main wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more reference elements/sections of straight stretching of the main wire structure with out twisting and a first reference axis”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited

invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

C) the third action performed as recited in process claim 14 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate third data/information representing a “main wire twist angle” formed by the difference between reference axis and the branch axis after having used finite element analysis in order to superimpose the first data/information on the second data/information while considering the shape and material properties of the wire like structure”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

D) the fourth action performed as recited in process claim 14 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate fourth data/information representing a “deformed shape model”, where the deformed shape model describes the sub wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more elements/sections and a clamp axis of a sub wire bundle at the location of a branch”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as

being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

E) the fifth action performed as recited in process claim 14 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of "using an unspecified machine/process to generate fifth data/information representing a "reference shape model", where the reference shape model describes the sub wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more reference elements/sections of straight stretching of the sub wire structure with out twisting and a second reference axis", since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

F) the sixth action performed as recited in process claim 14 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of "using an unspecified machine/process to generate sixth data/information representing a "sub wire twist angle" formed by the difference between a second reference axis and the clamp axis after having used finite element analysis in order to superimpose the first data/information on the second data/information while considering the shape and material properties of the wire like structure", since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being

processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

G) the seventh action performed as recited in process claim 14 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of "using an unspecified machine/process to generate seventh data/information representing a "wire twist angle" between the first reference axis and the clamp axis by using the third data/information to correct the sixth data/information", since as recited the data/information that is gathered/produced by the performing the recited function (1) is not positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

Hence, one of ordinary skill at the time the invention was made could interpret claim 14 when taken as a whole as being directed to nothing more than a process for the abstract manipulation of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.10 In regard to the limitations of independent/base claim 15, it is noted that:

A) the first action performed as recited in process claim 15 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of "using an unspecified machine/process to generate first data/information representing a "deformed shape model", where the deformed shape model describes the main wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more elements/sections and the branching

axis of a sub wire bundle at the location of a branch”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

B) the second action performed as recited in process claim 15 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate second data/information representing a “reference shape model”, where the reference shape model describes the main wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more reference elements/sections of straight stretching of the main wire structure with out twisting and a first reference axis”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

C) the third action performed as recited in process claim 15 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate third data/information representing a “main wire twist angle” formed by the difference between reference axis and the branch axis after having used finite element analysis in order to superimpose the first data/information on the

second data/information while considering the shape and material properties of the wire like structure”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

D) the fourth action performed as recited in process claim 15 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate fourth data/information representing a “deformed shape model”, where the deformed shape model describes the sub wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more elements/sections and a clamp axis of a sub wire bundle at the location of a branch”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

E) the fifth action performed as recited in process claim 15 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate fifth data/information representing a “reference shape model”, where the reference shape model describes the sub wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more reference elements/sections of straight

stretching of the sub wire structure with out twisting and a second reference axis”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

F) the sixth action performed as recited in process claim 15 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate sixth data/information representing a “sub wire twist angle” formed by the difference between a second reference axis and the clamp axis after having used finite element analysis in order to superimpose the first data/information on the second data/information while considering the shape and material properties of the wire like structure”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

G) the seventh action performed as recited in process claim 15 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate seventh data/information representing a “wire twist angle” between the first reference axis and the second reference axis by using the third data/information to correct the sixth data/information”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is

not positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

Hence, one of ordinary skill at the time the invention was made could interpret claim 15 when taken as a whole as being directed to nothing more than a process for the abstract manipulation of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.11 In regard to the limitations of independent/base claim 17, it is noted that:

A) the structure recited in manufacture/article claim 17 is deemed to be directed to nothing more than a structure of a memory that has the characteristic feature of containing a program or code or instructions as "non-functional descriptive material" that is intended to perform a data/information gathering/processing functions of claim 14, see the discussion of claim 14 above, since as one of ordinary skill at the time the invention was made would recognize the recited invention lacks a positive recitation of any structure that could implement the functions of the recited program or code or instructions stored on the media so as to provide a concrete and tangible practical and substantial credible utility because the recited "computer readable media" can not by itself realize the function of the recited program.

Hence, one of ordinary skill at the time the invention was made could interpret claim 17 when taken as a whole as being directed to nothing more than a manufacture/article that is intended to be a machine/process for the abstract manipulation of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.12 In regard to the limitations of independent/base claim 18, it is noted that:

A) the first action performed as recited in process claim 18 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate first data/information representing a “deformed shape model”, where the deformed shape model describes a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures where the wire bundle structures are clamped with clamp structures at predetermined locations as a series of one or more elements/sections and considers an clamp axis at each branching location”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

B) the second action performed as recited in process claim 18 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate second data/information representing a “reference shape model”, where the reference shape model describes the main wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more reference elements/sections of straight stretching of the main wire structure with out twisting and a first reference axis in order to obtain a reference plane”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by

one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

C) the third action performed as recited in process claim 18 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate third data/information representing a “twist free plane” of the final shape of the wire like structure by superimposing the first data/information on the second data/information while considering the shape and material properties of the wire like structure”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

D) the fourth action performed as recited in process claim 18 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to display the third data/information representing the “twist free plane” in combination with the second data/information and the clamp axis”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is not positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

Hence, one of ordinary skill at the time the invention was made could interpreted claim 18 when taken as a whole as being directed to nothing more than a process for the abstract manipulation

of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.13 The additional subject matter recited as dependent claim 19 is deemed to be directed to nonfunctional descriptive material that does not go beyond merely defining the nature/source of the recited data/information that is to be used when performing the recited processing and hence does not alter the statutory nature of the invention recited as the invention in the base claims.

9.1.3.14 In regard to the limitations of independent/base claim 20, it is noted that:

A) the first action performed as recited in process claim 20 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate first data/information representing a “deformed shape model”, where the deformed shape model describes the main wire structure of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures where the wire bundle structures are clamped with clamp structures at predetermined locations as a series of one or more elements/sections and considers a first clamp axis at each branching location”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

B) the second action performed as recited in process claim 20 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate second data/information representing a first “reference shape

model”, where the first reference shape model describes the main wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more reference elements/sections of straight stretching of the main wire structure with out twisting and a first reference axis in order to obtain a first reference plane”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

C) the third action performed as recited in process claim 20 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate third data/information representing a first “twist free plane” of the final shape of the main wire bundle of the wire like structure by superimposing the first data/information on the second data/information”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

D) the fourth action performed as recited in process claim 20 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate fourth data/information representing a “deformed shape model”, where the deformed shape model describes the sub wire structure of a wire-like

structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures where the wire bundle structures are clamped with clamp structures at predetermined locations as a series of one or more elements/sections and considers an second clamp axis at each branching location”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

E) the fifth action performed as recited in process claim 20 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to generate second data/information representing a second “reference shape model”, where the second reference shape model describes the sub wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more reference elements/sections of straight stretching of the sub wire structure with out twisting and a second reference axis in order to obtain a second reference plane”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

F) the sixth action performed as recited in process claim 20 is deemed to be a positive recitation of an action that is directed to nothing more than an action for

performing the data/information gathering/processing function of “using an unspecified machine/process to generate sixth data/information representing a second “twist free plane” of the final shape of the sub wire bundle of the wire like structure by superimposing the fourth data/information on the fifth data/information”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

G) the seventh action performed as recited in process claim 20 is deemed to be a positive recitation of an action that is directed to nothing more than an action for performing the data/information gathering/processing function of “using an unspecified machine/process to display the third data/information representing the first “twist free plane” in combination with the second “twist free plane” and the first clamp axis and the second clamp axis”, since as recited the data/information that is gathered/produced by the performing the recited function (1) is not positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

Hence, one of ordinary skill at the time the invention was made could interpreted claim 20 when taken as a whole as being directed to nothing more than a process for the abstract manipulation of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.15 In regard to the limitations of independent/base claim 21, it is noted that:

A) the first structure as recited in machine claim 21 is deemed to be a positive recitation of a structure that is directed to nothing more than a structure for performing the data/information gathering/processing function of "using an unspecified machine/process to generate first data/information representing a "deformed shape model", where the deformed shape model describes a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures where the wire bundle structures are clamped with clamp structures at predetermined locations as a series of one or more elements/sections and considers an clamp axis at each branching location", since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

B) the second structure as recited in machine claim 21 is deemed to be a positive recitation of a structure that is directed to nothing more than a structure for performing the data/information gathering/processing function of "using an unspecified machine/process to generate second data/information representing a "reference shape model", where the reference shape model describes the main wire bundle of a wire-like structure comprising a main wire bundle structure that branches off into one or more sub wire bundles structures as a series of one or more reference elements/sections of straight stretching of the main wire structure with out twisting and a first reference axis in order to obtain a reference plane", since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by

one of ordinary skill at the time the invention was made as positively performing any other function beyond the function recited as data/information gathering/processing.

C) the third structure as recited in machine claim 21 is deemed to be a positive recitation of a structure that is directed to nothing more than a structure for performing the data/information gathering/processing function of "using an unspecified machine/process to generate third data/information representing a "twist free plane" of the final shape of the wire like structure by superimposing the first data/information on the second data/information while considering the shape and material properties of the wire like structure", since as recited the data/information that is gathered/produced by the performing the recited function (1) is positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

D) the fourth structure as recited in machine claim 21 is deemed to be a positive recitation of a structure that is directed to nothing more than a structure for performing the data/information gathering/processing function of "using an unspecified machine/process to display the third data/information representing the "twist free plane" in combination with the second data/information and the clamp axis", since as recited the data/information that is gathered/produced by the performing the recited function (1) is not positively recited as being provided as input for use by latter processing that is positively recited as being performed either internally or externally of the recited invention; and (2) is not positively recited as being processed/gathered by any specific machine or process that would be interpreted by one of ordinary skill at the time the invention was made as positively performing any other function beyond the act/function recited as data/information gathering/processing.

Hence, one of ordinary skill at the time the invention was made could interpreted claim 21 when taken as a whole as being directed to nothing more than a machine for the abstract manipulation

of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.16 In regard to the limitations of independent/base claim 22, it is noted that:

A) the structure recited in manufacture/article claim 22 is deemed to be directed to nothing more than a structure of a memory that has the characteristic feature of containing a program or code or instructions as "non-functional descriptive material" that is intended to perform a data/information gathering/processing functions of claim 18 and/or claim /21, see the discussion of claim 18 and/or claim 21 above, since as one of ordinary skill at the time the invention was made would recognize the recited invention lacks a positive recitation of any structure that could implement the functions of the recited program or code or instructions stored on the media so as to provide a concrete and tangible practical and substantial credible utility because the recited "computer readable media" can not by itself realize the function of the recited program.

Hence, one of ordinary skill at the time the invention was made could interpreted claim 22 when taken as a whole as being directed to nothing more than a manufacture/article that is intended to be a machine/process for the abstract manipulation of data/information with out a claimed application of the results of the manipulation or claimed requirement that any of the recited structures or actions are present or would perform any function for any purpose not related to the manipulation of data/information.

9.1.3.17 The invention recited in claims 3, 18, 19, 20, 21 & 22 recites an action/structure that implies performing the function of outputting, for example displaying, the results of some of the processing of claims to an operator/user by using the phrase "displaying step". However, this recitation is deemed to be an insignificant concrete and tangible practical application of the result of the processing recited in these claims because the claimed invention fails to require that the displayed data/information be used in any manner to achieve the utility of the invention. As set forth above one of ordinary skill at the time the invention was made could interpret claim 3 as being directed to nothing more than a process/machine that is directed to a process/machine comprising nothing more than actions and structures that function to provide:

A) insignificant data/information gathering since the actions/structures as recited in the claim do nothing more than perform the function of gathering data/information for use in the processing that is latter recited in the claim, see In re RICHMAN, 195 USPQ 340 at 344 (CCPA 1977);

B) insignificant data/information processing that uses the collected/gathered data/information by fails to positively recite a concrete and tangible application of the results of the processing, see In re WARMERDAM, 31 USPQ2d 1745 at 1758-1759 (CAFC, 1994), and STATE STREET BANK AND TRUST CO. v SIGNATURE FINANCIAL GROUP INC., 38 USPQ2d 1596 at 1602 (CAFC 1998); and

C) the presentation of the results of the recited processing a data/information with out a positively recited requirement that the results of the processing be used by anyone or anything.

In view of the above fact situation, it is noted that when considering the same fact situation the Court has determined that a claim that is directed to nothing more than the abstract idea of collecting data/information, processing data/information and displaying/presenting the results of the processing as data/information to an user/operator is non-statutory, see (A) claim 5 of In re ABELE and MARSHALL, 214 USPQ 682 at 688 (CCPA 1982), which recited data/information processing and then displaying/presenting of the results of the data/information processing to an user and which the Court held was to be directed to non statutory subject matter, and (B) whereas a claim that collected, processed, and then used the results of the processing to perform another task outside of the processing by applying the results of the recited processing to perform another function in DIAMOND v. DIEHR AND LUTTON, 209 USPQ 1 at 11 (US SupCT, 1981), was held by the Court to be directed to statutory subject matter. Hence, the mere displaying of the results of processing as recited in the pending claims is deemed to not provide a concrete and tangible result for the results of the processing that is recited in the claims.

9.1.4 In view of the above characterization of claims 1-11, 13-15 & 17-22 it can clearly be seen that, as these claims would be reasonably interpreted by one of ordinary skill at the time the invention was made, as merely conveying to one of ordinary skill at the time the invention was made a description of an invention that does not go beyond the gathering and manipulation of

data/information and therefor merely sets forth the abstract ideas of receiving and transforming data by processing/manipulating the data/information into other data/information, for example transforming numbers to numbers without:

A) requiring by explicitly reciting and achieving a claimed requirement that the results of the claimed invention be tangibly used in anyway by anyone or anything in order to achieve either:

(1) a concrete and tangible useful result; or

(2) a concrete and tangible useful practical application of either:

(1) the recited mathematical processing; or

(2) the resultant numbers/data produced by the claimed invention;

or

B) reciting and achieving a physical transformation of one thing into something else.

Such a claimed invention consisting solely of data collection and processing or manipulating data/information, whether it is drafted as a machine or process or manufacture no matter how useful the claimed invention may appear, is deemed to be directed to an attempt by applicant to patent an abstract idea of processing/manipulating data/information which would preempt all uses of the processing recited as the claimed invention and therefore as set forth by the Court the claimed invention is deemed to be directed to non-statutory subject matter, see either (A) DIAMOND v. DIEHR AND LUTTON, 209 USPQ 1 at 8 (US SupCT, 1981), citing GOTTSCHALK v BENSON ET AL, 175 USPQ 673 (US SupCT, 1972), and PARKER v FLOOK, 198 USPQ 193 (US SupCT, 1978), at pages 7-8; or (B) In re WARMERDAM, 31 USPQ2d 1745 at 1758-1759 (CAFC, 1994); or (C) STATE STREET BANK AND TRUST CO. v SIGNATURE FINANCIAL GROUP INC., 38 USPQ2d 1596 at 1602 (CAFC 1998); or (D) In re RICHMAN, 195 USPQ 340 at 344 (CCPA 1977); or (E) In re MAUCORPS, 203 USPQ 812 @ 815-816 (CCPA 1979), citing both In re JOHNSON, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978), and In re FREEMAN, 573 F.2d at 1247, 197 USPQ at 472. Note also "Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot

constitute a statutory process. In practical terms, claims define nonstatutory processes if they: – consist solely of mathematical operations without some claimed practical application (i.e., executing a “mathematical algorithm”); or – simply manipulate abstract ideas, e.g., a bid (Schrader, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759), without some claimed practical application.” MPEP 2106, 2106.01 & 2106.02.

9.2 Claims 13, 17 & 22 are rejected under 35 U.S.C. 101 because the claimed invention is inoperative to achieve a substantial and credible utility and hence is directed to non-statutory subject matter.

9.2.1 It is noted that:

A) claims 13, 17 & 22 are directed to a manufacture/article/item that is defined by its characteristics/features/components that when taken as a whole defines the manufacture/article/item.

B) claims 13, 17 & 22 are directed to a storage device containing “program” or “code” or “instructions” per se as set forth by applicant in the preamble and hence these claims recite steps/actions that are intended to perform the associated functions with out a positive recitation of a structure or action that one of ordinary skill at the time the invention was made would recognize as being capable of achieving the recited functions and hence the recited invention when taken as a whole does not define either a process or machine, see MPEP 2106, 2106.01 & 2106.02, and In re CHATFIELD, 191 USPQ 730 @ 736 (CCPA 1976), or a machine, see In re ALAPPAT, 31 USPQ2d 1545 at 1558 (CAFC 1994).

C) claim 22 is directed to a “program” or “code” or “instructions” per se as set forth by applicant in the preamble and hence these claims recite steps/actions that are intended to perform the associated functions with out a positive recitation of a structure or action that one of ordinary skill at the time the invention was made would recognize as being capable of achieving the recited functions and hence the recited invention when taken as a whole does not define either a process or machine, see MPEP 2106, 2106.01 &

2106.02, and In re CHATFIELD, 191 USPQ 730 @ 736 (CCPA 1976), or a machine, see In re ALAPPAT, 31 USPQ2d 1545 at 1558 (CAFC 1994).

9.2.2 It is further noted that:

A) claims 13, 17 & 22 when taken as a whole are directed to a manufacture/article/item that is intended to achieve the claimed substantial and credible utility of determining the “twist angel” of a wire-like structure/bundle.

D) claims 13, 17 & 22 when taken as a whole are directed to a “program” or “code” or “instructions” per se as a process/machine/manufacture that by itself can not achieve the claimed substantial and credible utility of determining the “twist angel” of a wire-like structure/bundle since as one of ordinary skill at the time the invention was made would recognize these claims fail to positively recite the structure that would be necessary to implement the functions of the recited “program” or “code” or “instructions” so as to achieve the disclosed and recited utility of the claimed invention.

9.2.3 In regard to the pending claim and when taking each claim as a whole and interpreting the claims, one of ordinary skill at the time of the invention would make the following observations in regard each of the limitations of the claims, that:

A) claims 13, 17 & 22 recite an intended utility of determining the “twist angel” of a wire-like structure/bundle for the “program for” or “code for” or “instructions for” that are stored as non-functional descriptive material on/in “a computer readable media” or “a recording media” in claims 13 & 17 and as a program in claim 22 as a manufacture/article in claims 12, 17 & 22 that is intended to perform the substantial and credible functions necessary in order to achieve the utility of determining the “twist angel” of a wire-like structure/bundle;

B) the invention as recited in claims 13, 17 & 22 is intended to perform the one or more recited functions that have been recited for the stored “program for” or “code for” or “instructions for” that has been stored on/in “a computer readable media” or “a recording media” as the claimed invention in order to achieve the desired intended substantial and credible utility of the disclosed invention, however the invention as recited, would be interpreted as clearly failing to positively recite any type of limitation

that would be interpreted by one of ordinary skill at the time the invention was made as requiring the operation of any machine/process to be affected in anyway by the recited functions of the of the claimed invention in order to achieve the desired intended substantial and credible utility of the disclosed and claimed invention;

C) in regard to the body of claims 13, 17 & 22, as applicant has recited the claimed invention has:

(1) set forth a "software program" or "code" or "a manufacture" in claims 13, 17 & 22 comprising "computer program for" or "code for" or "instructions for" performing one or more intended functions that would be associated with the functions required to achieve the substantial and credible utility of the disclosed and claimed invention; and

(2) failed to set forth either (a) a specific machine that would operate in a specific manner by executing the recited "program" or "codes" so as to produce a new machine, see In re ALAPPAT, 31 USPQ2d 1545 at 1558 (CAFC 1994), or (b) a process of operating a machine to perform the recited functions of the "program" or "code", see In re CHATFIELD, 191 USPQ 730 @ 736 (CCPA 1976), and

D) neither (1) the data/information that represents either the "computer program for" or "code for" or "instructions for"; nor (2) the computer readable media or memory device or recording media alone, that applicant has recited as the claimed invention, can produce a concretely and tangibly result that would be required for the recited functionality of the claimed invention.

Hence, as one of ordinary skill at the time the invention was made would recognize, the language of the claims merely recites functions that the program/code or data/information is intended to accomplish as the invention but fails to recite any positive limitation that would be interpreted by one of ordinary skill at the time the invention was made as a positive recitation that would permit the functionality of the recited program or code or instructions or data/information stored on the computer readable media or memory device or recording media to produce the required concrete and tangible result that would be associated achieving the substantial and credible utility of the

disclosed and claimed invention. Therefore, one of ordinary skill at the time the invention was made would recognize that the positively recited functions for the "code" or "program" or "instructions" are in fact non-functional descriptive material/data/information upon which patentability can not be based, "Cf. In re GULACK, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983) (when descriptive material is not functionally related to the substrate, the descriptive material will not distinguish the invention from the prior art in terms of patentability). Common situations involving nonfunctional descriptive material are: ... - a computer that differs from the prior art solely with respect to nonfunctional descriptive material that cannot alter how the machine functions (i.e., the descriptive material does not reconfigure the computer), or - a process that differs from the prior art only with respect to nonfunctional descriptive material that cannot alter how the process steps are to be performed to achieve the utility of the invention. Thus, if the prior art suggests storing a song on a disk, merely choosing a particular song to store on the disk would be presumed to be well within the level of ordinary skill in the art at the time the invention was made. The difference between the prior art and the claimed invention is simply a rearrangement of nonfunctional descriptive material." MPEP 2106, 2106.01 & 2106.02.

9.2.4 In view of the above characterization of claims 13, 17 & 22 it can clearly be seen that, these claims would be reasonably interpreted by one of ordinary skill at the time the invention was made, as merely conveying to one of ordinary skill at the time the invention was made a description of an invention that merely sets forth the concept of a manufacture/article comprising data/information that has been stored/recorded in/on the manufacture/article in some manner is a program or code or instructions, where the recited memory/manufacture/article alone, that is by itself, can not realize the disclosed and claimed credible and substantial utility as set forth by applicant.

9.2.5 Such a claimed invention would be recognized by one of ordinary skill at the time the invention was made, as describing a claimed invention that is not operative to achieve the disclosed and claimed credible and substantial utility as set forth by applicant and that has been held by the court to be non-statutory subject matter, see In re SARKAR, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978).

10. Response to applicant's arguments.

10.1 The objections and rejection that have not been repeated here in have been over come by applicant's last response.

10.2 How Claims are to be interpreted during the prosecution of an application for patent.

10.2.1 The pending claims are interpreted by giving the language of every positively recited limitation of the pending claims the broadest reasonable interpretation that is consistent with how one of ordinary skill at the time of the invention would have interpreted the language of the claims, In re Cortright, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999), while (1) taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in applicant's specification, In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997), and (2) without reading unrecited limitations from applicant's disclosure in to the claims, see In re PRATER AND WEI, 162 USPQ 541 at 551 (CCPA 1969) "We are not persuaded by any sound reason why, at any time before the patent is granted, an applicant should have limitations of the specification read into a claim where no express statement of the limitation is included in the claim.", In re PRATER AND WEI, 162 USPQ 541 at 551 (CCPA 1969).

10.2.2 Further, when interpreting the claims as a whole, then the interactions of claim limitations as a whole must be considered in order to determine the scope of a claim and the applicant's contribution in the art, In re LARSEN, No. 01-1092 (Fed. Cir. May 9, 2001) (unpublished) "The court observed that the totality of all the limitations of the claim and their interaction with each other must be considered to ascertain the inventor's contribution to the art." Where a statutory process/machine must contain an operative series of acts/functions or structures, In re MUSGRAVE, 167 USPQ 280 at 289-290 (CCPA 1970), with explicitly recite all of the necessary interactions to accomplish the recited utility of the claimed invention, for without these interaction the claim as a whole would not be a proper process/machine under the statute, In re SARKAR 200 USPQ 132 at 136 (CCPA 1978).

10.2.3 In regard to the limitations on the interpretation of the claimed invention as imposed by the Court, because it is noted that applicant has gone to great lengths in the written description to describe each of the claimed structures or actions recited in the limitations of the claimed invention by using a written description that:

A) does not describing a specific structure or a specific action to provide a recited function; and

B) merely describing the claimed structures or actions by describing the function of each of the claimed structures or actions;

then, it is noted that as set forth by the Court each of the limitations of the claims would be reasonably interpreted by one of ordinary skill at the time of the invention as not being not limited solely to the structures or actions that would correspond to the written description of the claimed structures or actions. Therefore, in fact the limitations of the claims would to be broadly interpreted by one of ordinary skill at the time the invention was made to include any and all structures or actions that would provide the corresponding functions that have been recited for the structures or actions that are recited in the limitations of the claimed invention.

10.2.4 As a final note, although it is conceivable that one of ordinary skill may know many different actions/structures that would achieve the functions of the structures and actions recited as claimed invention, since the claims fail to positively recite the actual structures or actions that are used in the claimed invention, then one of ordinary skill at the time the invention was made would have recognized that any type of structure or action that would achieve the recited function could be used without being limited to the disclosed structures and/or actions that are not recited and therefore may not be attributed to the claimed invention.

10.3 In regard to the rejection of claims 1-11, 13-15 & 17-22 under 35 U.S.C. 101 applicant's arguments are deem non persuasive and this rejection has been maintained in view of the respective modified rejection as set forth above and the following considerations.

10.3.1 In regard to applicant's arguments regarding the nature of the subject matter recited as the invention and the functions/acts that as recited in the claims are performed by the instant invention. It would appear that applicant has not considered what the knowledge of one of ordinary skill would be regarding the claimed invention, how one of ordinary skill would interpret the limitations of the claimed invention, and has read constraining limitation from the disclosure into the claims, which is a practice that the Court has instructed the Patent Office not to do, see In re PRATER AND WEI, 162 USPQ 541 at 551 (CCPA 1969).

10.3.2 In regard to the rejection of claims 1-11, 13-15 & 17-22 under 35 U.S.C. 101, as set forth above, it is noted that:

A) unclaimed useful applications/utilities of claimed subject matter as described in the written description may not be imparted to the claimed invention from the disclosure, see In re PRATER AND WEI, 162 USPQ 541 at 551 (CCPA 1969); and

B) although there is a large amount of subject matter, that may be patentable as a machine, process, composition of matter or manufacture under 35 U.S.C. 101, the Court has recognized that:

(1) there are some types of subject matter that is excluded from being proper subject matter for patent protection under 35 U.S.C. 101, such as laws of nature, physical phenomena, and abstract ideas, see DIAMOND v. DIEHR AND LUTTON, 209 USPQ 1 at 8 (US SupCT, 1981); and

(2) even the subject matter that is excluded from patent protection under 35 U.S.C. 101 may become proper subject matter for a patent under 35 U.S.C. 101 where the claimed invention goes beyond merely the manipulation of excluded subject matter, see GOTTSCALK v BENSON ET AL, 175 USPQ 673 (US SupCT, 1972) and PARKER v FLOOK, 198 USPQ 193 (US SupCT, 1978), at pages 7-8; and

C) the Court has provided some guidance in determining if a claimed invention goes beyond the mere manipulation of excluded subject matter by recognizing that for a claimed invention to go beyond the mere manipulation of excluded subject matter and thereby to become proper subject matter for patent protection under 35 U.S.C. 101, then from the point of view of one of ordinary skill that the time the invention was made the claimed invention must be interpreted as including a positive recitation of a structure or an action that performs a function that would be interpreted by one of ordinary skill as either:

(1) providing a credible concrete and tangible substantial useful application of the results of the claimed manipulation of excluded subject matter, see In re WARMERDAM, 31 USPQ2d 1745 at 1758-1759 (CAFC, 1994) and

STATE STREET BANK AND TRUST CO. v SIGNATURE FINANCIAL GROUP INC., 38 USPQ2d 1596 at 1602 (CAFC 1998); or

(2) going beyond merely reciting a particular field of use for the claimed manipulation of excluded subject matter, see DIAMOND v. DIEHR AND LUTTON, 209 USPQ 1 at 11 (US SupCT, 1981); or

(3) going beyond merely reciting insignificant activity after the manipulation of excluded subject matter, see DIAMOND v. DIEHR AND LUTTON, 209 USPQ 1 at 11 (US SupCT, 1981); or

(4) going beyond merely reciting insignificant activity that as claimed would only provide data/information to the claimed manipulation of excluded subject matter, see In re RICHMAN, 195 USPQ 340 at 344 (CCPA 1977);

Where it is noted that the Court has deemed the displaying of the results of a manipulation of excluded subject matter as being an insignificant activity after the manipulation, note claim 5 which displayed the results of a manipulation of excluded subject matter was held to be non-statutory, see In re ABELE and MARSHALL, 214 USPQ 682 at 688 (CCPA 1982); and

D) the Courts have further recognized that the above guidance regarding proper subject matter for patent protection under 35 U.S.C. 101 applies to both process and machine claims alike, see In re MAUCORPS, 203 USPQ 812 @ 815-816 (CCPA 1979) and In re JOHNSON, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978) and In re FREEMAN, 573 F.2d at 1247, 197 USPQ at 472.”

E) where computer readable media are concerned the Courts and the Patent Office have had the following additional comments:

(1) that data structures by definition are not programs, “(The definition of “data structure” is “a physical or logical relationship among data elements, designed to support specific data manipulation functions.” The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).)”, see also MPEP 2106, 2106.01 & 2106.02;

(2) concerning statutory subject matter, as set forth in the following quote, the computer program running on a computer makes the computer a different machine, see In re ALAPPAT, 31 USPQ2d 1545 at 1558 (CAFC 1994), “We have held that such programming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.”;

(3) a computer program is not a statutory process because the program alone can not bring about a useful result with out being claim as being executed by a computer, see MPEP 2106, 2106.01 & 2106.02 and note that nonfunctional data stored in a memory device is non-statutory, see “When nonfunctional descriptive material is recorded on some computer-readable medium, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make it statutory. Such a result would exalt form over substance. In re SARKAR, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978)”; and

(4) that a computer readable media containing data/information that would cause a useful function to be performed when claimed in conduction with a computer in such a manner that the functionality recited as the invention can be realized are statutory, see MPEP 2106, 2106.01 & 2106.02 and In re BEAUREGARD, 35 USPQ2d 1383 (CAFC 1995), and note the corresponding claims of Beauregard et al (5,7010,578).

10.3.2.1 In view of points (A) through (D) above, and:

A) applicant’s arguments have not provided any evidence, beyond unsupported ascertains regarding the interpretation of unclaimed limitations, that would tend to support a conclusion that invention as recited in claims 1-11, 13-15 & 17-22 would be interpreted by one of ordinary skill at the time the invention was made as positively reciting anything more than actions/structures that perform the functions of gathering and

processing data/information without a concrete and tangible practical application of the results of the recited processing; and

B) as set forth above by the examiner in the rejection of claims 1-11, 13-15 & 17-22, the claimed invention would be reasonably interpreted by one of ordinary skill at the time the invention was made as merely conveying a positive recitation of an invention that does nothing more than perform the acts/functions of gathering and processing data/information with out a concrete and tangible practical application of the results of the recited processing, because the claimed invention lacks a positive recitation that would require that the resultant data/information of the recited gathering and processing of the claimed invention to be used/applied in a concrete and tangible manner that is external to the invention that is currently recited as the claimed invention;

and therefore the claimed invention as recited in this/these claims is deemed to be solely directed to the excluded subject matter of the "abstract idea" of collecting and manipulating data/information that would preempt any and all uses of the recited processing.

10.3.2.2 In view of points (A) though (E) above and applicant's arguments have not provided any evidence, beyond unsupported ascertains regarding the interpretation of unclaimed limitations, that would tend to support a conclusion that invention as recited in claims 13, 17 & 22 would be interpreted by one of ordinary skill at the time the invention was made as positively reciting anything more than non-functional descriptive material stored on a "computer readable media" that can not operatively and usefully perform the described acts of gathering and processing data/information, these claims are deemed to be direct to non-statutory subject matter.

10.3.2.3 To put the above discussion in more concise terms, unless the results of the claimed gathering and processing of data/information **ARE REQUIRED TO BE USED BY SOMEONE OR SOMETHING IN ORDER TO ACHIEVE** the utility of the claimed invention, then one of ordinary skill at the time the invention was made would ask the question:

A) WHAT CONCRETE AND TANGIBLE PRACTICAL APPLICATION OR USE WOULD RESULT FROM PERFORMING THE POSITIVELY RECITED HYPOTHETICAL EXERCISES OF GATHERING AND PROCESSING OF DATA/INFORMATION AS RECITED IN THE CLAIMS, IF THE RESULTANT

DATA/INFORMATION IS NOT REQUIRED TO BE KNOWN AND USED IN ANYWAY.

B) WHAT USE OR FUNCTION WOULD THE DATA/INFORMATION THAT IS STORED ON THE COMPUTER READABLE MEDIA HAVE IF THE STORED DATA/INFORMATION IS NOT EXECUTED OR USED BY A MACHINE/PROCESS SO THAT IT WILL CHANGE OR ALTER THE OPERATION OR FUNCTION OF THE MACHINE/PROCESS.

10.3.2.4 Applicant is reminded that as the COURT has held and as set forth in the MPEP, an invention that does not go beyond merely manipulating data/information in the abstract is directed to NON-STATUTORY subject matter regardless of whether one of ordinary skill at the time the invention was made would recognize how useful the results of the claimed invention may be, or to what use the results of the claimed invention may be put to achieve a desired utility.

10.3.2.5 In regard to an alleged transformation, since one of ordinary skill at the time the invention was made would reasonably interpret the data/information processing as recited in the claimed invention to be nothing more than a positive recitation of merely performing the function of rearranging or sorting data/information that occurs with out performing a transformation of the data/information into another type of data/information that would represent something other than just a rearrangement or sorting of the data/information because the results of the recited data/information processing changes the order and not the content of data/information, and hence applicant's arguments are deemed to be non persuasive.

11. The following is a statement of reasons for the indication of allowable subject matter over the prior art:

A) the prior art, for example:

(1) Nath discloses that it is useful and beneficial to use a finite element analysis in order to simulate a beamed element.

(2) either 12/18/2002 Sakaura et al (EP 1267284 A2 or EP 1267285 A2 or EP 1267286 A2 or JP 2002-373533 A or 2003/0020711 or 2003/0020715 or 6,842,173) disclose a machine/process that provides the useful and beneficial

function of designing wiring harnesses by dividing the wiring harness into segments and overlaying each of the segments of the harness over one another in order to simulate the final 3 dimension shape of the wiring harness.

B) however, the prior art does not fairly teach or suggest in regard to claims 1 & 13 a process in claim 1 and a machine/article in claim 13 that provides the useful and beneficial function of determining the twist angle for a wiring harness by providing actions in claim 1 and structures in claim 13 that perform at least the functions of:

(1) using a "deformed shape model" in order to model a wiring harness that comprising a main wire structure and sub wire structures that branch away from the main wire structure that has clamps to hold the wiring harness in place at the branch points as a series of beam elements while adding a "clamp axis" to each clamped branch point;

(2) using a "reference shape model" in order to model the main wire structure as a connected series of beam elements which a "reference plane" added to each clamped branch point;

(3) using a finite element analysis method in order to determine the shape of the wiring harness when a deformed reference shape mode is superimposed onto the deformed shape model while considering the shape an properties of the materials of the wiring harness; and

(4) determining a "twisted angle" after the superimposition as the angle between the reference axis and the clamp axis.

Claims 2-4, which depend from claim 1, are allowable over the prior art for the same reason.

C) however, the prior art does not fairly teach or suggest in regard to claim 5 a process in claim 5 that provides the useful and beneficial function of determining the twist angle for a wiring harness by providing actions in claim 5 that perform at least the functions of:

(1) using a "finite element model" in order to model a wiring harness that comprising a main wire structure and sub wire structures that branch away from

the main wire structure in a reference plane the wiring harness in place at the branch points as a series of elastic beam elements;

(2) deforming the shape of the wiring harness at the branch points by considering the shape and properties of the materials of the wiring harness; and

(3) determining a "twisted angle" as angle between the reference plane and the sub wire structure at the branch point.

Claims 6-11, which depend from claim 5, are allowable over the prior art for the same reason.

D) however, the prior art does not fairly teach or suggest in regard to claims 14 & 17 a process in claim 14 and a machine/article in claim 17 that provides the useful and beneficial function of determining the twist angle for a wiring harness by providing actions in claim 14 and structures in claim 17 that perform at least the functions of:

(1) using a "deformed shape model" in order to model a main wire structure of wiring harness comprising a main wire structure and sub wire structures that branch away from the main wire structure at branch points as a series of beam elements while adding a "branch axis" to at each branch point;

(2) using a "reference shape model" in order to model the main wire structure as a connected series of beam elements that have been straight stretched and not twisted and having a "first reference axis" and a branch axis added to each branch point;

(3) determining a "first twist axis" by using a finite element analysis method in order to determine the shape of the main wiring structure when a deformed reference shape mode is superimposed onto the deformed shape model while considering the shape and properties of the materials of the wiring harness and then determining the "first twisted angle" as the angle between the first reference axis and the branch axis;

(4) using a "deformed shape model" in order to model a sub wire structure of wiring harness as a series of beam elements while adding a "clamp axis" to at each branch point;

(5) using a "reference shape model" in order to model the sub wire structure as a connected series of beam elements that have been straight stretched and not twisted and having a "second reference axis" and a clamp axis added to each branch point;

(6) determining a "second twist axis" by using a finite element analysis method in order to determine the shape of the sub wiring harness when a deformed reference shape mode is superimposed onto the deformed shape model while considering the shape and properties of the materials of the wiring harness and then determining the "second twisted angle" as the angle between the second reference axis and the clamp axis; and

(7) determining a "twist angle" between the first reference plane and the clamp axis by using the first twist angle to correct the second twist angle.

E) however, the prior art does not fairly teach or suggest in regard to claim 15 a process in claim 15 that provides the useful and beneficial function of determining the twist angle for a wiring harness by providing actions in claim 15 that perform at least the functions of:

(1) using a "deformed shape model" in order to model a main wire structure of wiring harness comprising a main wire structure and sub wire structures that branch away from the main wire structure at branch points as a series of beam elements while adding a "first branch axis" to at each branch point;

(2) using a "reference shape model" in order to model the main wire structure as a connected series of beam elements that have been straight stretched and not twisted and having a "first reference axis" and a branch axis added to each branch point;

(3) determining a "first twist axis" by using a finite element analysis method in order to determine the shape of the main wiring structure when a deformed reference shape mode is superimposed onto the deformed shape model while considering the shape and properties of the materials of the wiring harness

and then determining the "first twisted angle" as the angle between the first reference axis and the first branch axis;

(4) using a "deformed shape model" in order to model a sub wire structure of wiring harness as a series of beam elements while adding a "second branch axis" to at each branch point;

(5) using a "reference shape model" in order to model the sub wire structure as a connected series of beam elements that have been straight stretched and not twisted and having a "second reference axis" and a second branch axis added to each branch point;

(6) determining a "second twist axis" by using a finite element analysis method in order to determine the shape of the sub wiring harness when a deformed reference shape mode is superimposed onto the deformed shape model while considering the shape an properties of the materials of the wiring harness and then determining the "second twisted angle" as the angle between the second reference axis and the second branch axis; and

(7) determining a "twist angle" between the first reference plane and the second branch axis by using the first twist angle to correct the second twist angle.

F) however, the prior art does not fairly teach or suggest in regard to claims 18, 21 & 22 a process in claim 18, a machine in claim 21, and a article/machine in claim 22 that provides the useful and beneficial function of determining the twist angle for a wiring harness by providing actions in claim 18 and structures in claims 21 & 22 that perform at least the functions of:

(1) using a "deformed shape model" in order to model a main wire structure and nodes at which wire structures that branch away from the main wire structure and that has been clamped to hold the wiring structure in place at the node points as a series of beam elements while adding a "clamp axis" to each clamped node point;

(2) using a "reference shape model" in order to model the main wire structure as a connected series of beam elements that have been straight stretched

and not twisted and that have a "reference axis" for determining a "twist free plane" added to each node point;

(3) determining the "twist free plane" by connecting the reference axes after the reference shape model of the main wiring structure has been deformed and then superimposing the deformed reference shape mode onto the deformed shape model; and

(4) displaying the determined "twist-free plane" with the deformed shape model and the clamp axis.

Claim 19, which depends from claim 18, are allowable over the prior art for the same reason.

G) however, the prior art does not fairly teach or suggest in regard to claim 20 a process in claim 20 that provides the useful and beneficial function of determining the twist angle for a wiring harness by providing actions in claim 20 that perform at least the functions of:

(1) using a "deformed shape model" in order to model a main wire structure and nodes at which sub wire structures branch away from the main wire structure and that has been clamped to hold the wiring structure in place at the node points as a series of beam elements while adding a "first clamp axis" to each clamped node point;

(2) using a "reference shape model" in order to model the main wire structure as a connected series of beam elements that have been straight stretched and not twisted and that have a "first reference axis" for determining a "first twist free plane" added to each node point;

(3) determining the "first twist free plane" by connecting the first reference axes after the reference shape model of the main wiring structure has been deformed and then superimposing the deformed reference shape mode onto the deformed shape model;

(4) using a "deformed shape model" in order to model the sub wire structure that has branched away from the main wire structure at a node and that

has been clamped to hold the wiring structure in place at the node points as a series of beam elements while adding a "second clamp axis" to each clamped node point;

(5) using a "reference shape model" in order to model the sub wire structure as a connected series of beam elements that have been straight stretched and not twisted and that have a "second reference axis" for determining a "second twist free plane" added to each node point;

(6) determining the "second twist free plane" by connecting the second reference axes after the reference shape model of the sub wiring structure has been deformed and then superimposing the deformed reference shape mode onto the deformed shape model; and

(7) displaying the determined "first twist-free plane" with the determined "second twist free plane" and deformed shape model and the first clamp axis and the second clamp axis.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward R. Cosimano whose telephone number is 571-272-0571. The examiner can normally be reached on 571-272-0571 from 7:30am to 4:00pm (Eastern time).


12.1 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow, can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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12.2 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ERC
11/09/2007


Edward Cosimano
Primary Examiner